



# Spectral Gamma-Ray Borehole Log Data Report

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Borehole

# 21-27-08

Log Event A

## Borehole Information

Farm : <u>BX</u>	Tank : <u>BX-102</u>	Site Number : <u>299-E33-146</u>
N-Coord : <u>45,470</u>	W-Coord : <u>53,195</u>	TOC Elevation : <u>656.11</u>
Water Level, ft :	Date Drilled : <u>8/31/1970</u>	

## Casing Record

Type : <u>Steel-welded</u>	Thickness : <u>0.280</u>	ID, in. : <u>6</u>
Top Depth, ft. : <u>0</u>	Bottom Depth, ft. : <u>150</u>	

## Borehole Notes:

According to the driller's log, this borehole was drilled in August 1970 to a depth of 150 ft using 6-in. casing. The drilling report does not indicate the borehole casing was perforated or grouted. The casing thickness is presumed to be 0.280 in., on the basis of the published thickness for schedule-40, 6-in. steel tubing. The top of the casing, which is the zero reference for the SGLS, is approximately 0.5 ft below the ground surface.

## Equipment Information

Logging System : <u>2</u>	Detector Type : <u>HPGe</u>	Detector Efficiency: <u>35.0 %</u>
Calibration Date : <u>04/1997</u>	Calibration Reference : <u>GJO-HAN-13</u>	Logging Procedure : <u>P-GJPO-1783</u>

## Log Run Information

Log Run Number : <u>1</u>	Log Run Date : <u>06/24/1997</u>	Logging Engineer: <u>Bob Spatz</u>
Start Depth, ft.: <u>148.5</u>	Counting Time, sec.: <u>100</u>	L/R : <u>L</u> Shield : <u>N</u>
Finish Depth, ft. : <u>79.0</u>	MSA Interval, ft. : <u>0.5</u>	Log Speed, ft/min.: <u>n/a</u>

Log Run Number : <u>2</u>	Log Run Date : <u>06/25/1997</u>	Logging Engineer: <u>Bob Spatz</u>
Start Depth, ft.: <u>80.0</u>	Counting Time, sec.: <u>100</u>	L/R : <u>L</u> Shield : <u>N</u>
Finish Depth, ft. : <u>0.0</u>	MSA Interval, ft. : <u>0.5</u>	Log Speed, ft/min.: <u>n/a</u>



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### Analysis Information

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Analyst : S.D. Barry

Data Processing Reference : MAC-VZCP 1.7.9

Analysis Date : 07/08/1997

#### Analysis Notes :

This borehole was logged by the SGLS in two log runs. The pre- and post-survey field verification spectra met the acceptance criteria established for the peak shape and detector efficiency, confirming that the SGLS was operating within specifications. The energy calibration and peak-shape calibration from these spectra were used to establish the channel-to-energy parameters used in processing the spectra acquired during the logging operation.

Casing correction factors for a 0.280-in.-thick steel casing were applied during analysis.

The man-made radionuclides Cs-137, Co-60, Eu-154, Sb-125, and processed uranium were detected around this borehole. The presence of Cs-137 was measured almost continuously from the ground surface to a depth of 20 ft and intermittently to 77 ft. The presence of Co-60 was detected at 73 ft, 94 ft, and almost continuously from 135 to 147 ft. The presence of Eu-154 was detected from 73 to 74.5 ft. Sb-125 concentrations were measured almost continuously from 51.5 to 93 ft and 98 to 103 ft. Processed uranium was measured from 45 to 46 ft, 73 to 76.5 ft, at 87 ft, and from 91.5 ft to the bottom of the logging interval (148.5 ft).

The K-40 concentration values increase at about 41 ft.

Additional information and interpretations of log data are included in the main body of the Tank Summary Data Report for tank BX-102.

#### Log Plot Notes:

Separate log plots show the man-made and the naturally occurring radionuclides. The natural radionuclides can be used for lithology interpretations. The headings of the plots identify the specific gamma rays used to calculate the concentrations.

Uncertainty bars on the plots show the statistical uncertainties for the measurements as 95-percent confidence intervals. Open circles on the plots give the MDL. The MDL of a radionuclide represents the lowest concentration at which positive identification of a gamma-ray peak is statistically defensible.

A combination plot includes the man-made, natural radionuclides and the total gamma derived from the spectral data.